

Abstract Submitted
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Rydberg states of triatomic hydrogen and deuterium¹ JIA WANG, CHRIS GREENE, Department of Physics and JILA, University of Colorado, Boulder, Colorado 80309-0440, USA, RICHARD SAYKALLY, Department of Chemistry, University of California, Berkeley, California 94720-1460, USA — Triatomic hydrogen (H_3) and its isotopologue (D_3) are the simplest neutral polyatomic molecules. They have been of great interest in recent decades. In a previous study [1], we calculated radiative transitions between neutral H_3 Rydberg states and described the mid-infrared laser lines observed in hydrogen/rare gas discharges. We extend the study to D_3 , and discuss the mechanism for the population inversion that is required for lasing action, which has been observed by the Berkeley group.

[1] R. J. Saykally, E. A. Michael, J. Wang, and Chris H. Greene, *J. Chem. Phys.* **133**, 234302 (2010).

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